

## CLAIMS

1           1.     A steady rest with independent vertical and horizontal adjustments,  
2 comprising:

3                     a base;

4                     an actuating member movable along a first axis toward a  
5 work piece position that is moveable either vertically or horizontally;

6                     a body slidably mounted on the base and having a first guide  
7 slot disposed at a first angle with respect to said first axis, and a second guide  
8 slot disposed at a second angle with respect to said first axis, and means  
9 connecting the body to the actuating member for movement along said first axis;

10                    a first arm slidably movable in the first guide slot along a  
11 linear path of motion between a clamping position, and a release position along a  
12 second path of motion between a clamping position and a release position;

13                    a second arm slidably movable in the second guide slot;

14                    a first workpiece gripping member pivotally mounted on the  
15 first arm;

16                    a second workpiece gripping member pivotally mounted on  
17 the second arm;

18                    a third workpiece gripping member mounted on the body, so  
19 as to be moveable therewith;

20                    a first gripping pad pivotally mounted on the first arm;

21                    a second gripping pad spaced from the first gripping pad  
22 pivotally mounted on the second arm;

23                               a third gripping pad mounted on the body;  
24                               the actuating member being connected to the first arm for  
25 movement in a first stroke, and the second arm for movement in a second stroke  
26 along their respective paths of motion;  
27                               cam means deposited between the actuating member and the  
28 first arm and the second arm for moving the first arm and the second arm toward  
29 their respective clamping position on the actuating member is moved in a first  
30 direction, and for moving the first arm and the second arm toward their respective  
31 release positions as the cam member is movable in a reverse direction,  
32                               whereby a rotating workpiece may be gripped between the  
33 first, the second and the third new pads in which the axis of rotation of the  
34 workpiece is in a first workpiece position;  
35                               the body having a first camming opening, and a second  
36 camming opening spaced from the first camming opening;  
37                               a first camming plate slidably mounted in the first camming  
38 opening for movement in a direction normal to said first axis, as the actuating  
39 member moves the body along said first axis;  
40                               a second camming plate slidably mounted in the second  
41 camming slot for movement in a direction normal to said first axis, as the  
42 actuating member moves the body along said first axis;  
43                               the first camming plate having a third camming opening;  
44                               the second camming plate having a fourth camming  
45 opening;

46                   a first camming structure carried on the first arm and  
47 received in the third camming slot so as to be movable in a first camming motion  
48 as the actuating member is moving the body along said first axis;

49                   first adjusting structure mounted on the body and connected  
50 to the first camming plate to adjust the path of motion of the first arm either  
51 horizontally or vertically;

52                   a second camming structure carried on the second arm and  
53 received in the fourth camming slot so as to be movable in a second path of  
54 motion as the actuating member is moving the body along said first axis; and

55                   second adjusting structure mounted on the body and  
56 connected to the second camming plate to adjust the path of motion either  
57 horizontally or vertically.

1           2.     A steady rest as defined in claim 1, and in which the actuating  
2 member applies a constant bias on the first arm in their respective clamping  
3 positions.

1           3.     A steady rest as defined in claim 1 in which the first and second  
2 adjusting structures are threaded members threadably mounted on the body.

1           4.     A steady rest as defined in claim 1, and in which the actuating  
2 member is hydraulically actuated.

5. In a workpiece gripping apparatus, a combination comprising:

a base;

a body slidably mounted on the base;

a first clamping arm slidably mounted on the base along a first linear path of motion between a clamping position, and a release position;

a second clamping arm slidably mounted on the base adjacent the first clamping arm along a second linear path of motion parallel to the first path of motion of the first clamping arm, between a clamping position, and a release position;

the first clamping bar having a camming slot disposed at an acute angle with respect to the linear path of motion of the first clamping bar;

the second clamping bar having a camming slot disposed at an acute angle with respect to the linear path of motion of the second clamping bar;

actuator means and means supporting the actuator means for movement along an axis and either toward a workpiece position or away from the workpiece position;

a camming means disposed in the body and in convention between the actuator member and the first arm and the second arm for moving them along their respective linear paths of motion toward their respective clamping positions as the camming means is moved in an actuating motion, and for moving the clamping bars toward their respective release positions as the camming means is moved in reverse motion; and

24                               a first workpiece gripping member pivotally mounted on the  
25 first clamping arm, and a second workpiece gripping member on the second  
26 clamping arm for engaging a rotatable workpiece as the clamping arms are urged  
27 toward their respective clamping positions.

1           6.     A steady rest apparatus as defined in claim 1, in which the  
2 workpiece gripping members each comprise a wear pad.

1           7.     A steady rest as defined in claim 1, in which the first workpiece  
2 gripping member is spaced from the second workpiece gripping member, and the  
3 first and second workpiece gripping members are disposed on opposite sides of  
4 the axis of rotation of the workpiece.

1           8.     A steady rest as defined in claim 1, including a piston and cylinder  
2 actuator for moving the third clamping member toward or away from the  
3 workpiece.  
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